3.3.5.4 Northern Hardwood Swamp

3.3.5.4.1 Community Overview

The northern hardwood swamp is a deciduous forested wetland that occurs along lakes or streams, or in insular basins in poorly drained morainal landscapes. This community occurs across the state, but is most common in the northern Ecological Landscapes. The dominant tree species is black ash, but in some stands red maple, yellow birch, and (*formerly*) American elm are also important. The tall shrub speckled alder may be locally common. The herbaceous flora is often diverse and may include many of the same species found in alder thickets. Typical species are marsh-marigold, swamp raspberry, skullcap, orange jewelweed, and many sedges. Soils may be mucks or mucky sands.

3.3.5.4.2 Vertebrate Species of Greatest Conservation Need Associated with Northern Hardwood Swamp

Sixteen vertebrate Species of Greatest Conservation Need were identified as moderately or significantly associated with northern hardwood swamp (Table 3-121).

Table 3-121. Vertebrate Species of Greatest Conservation Need that are (or historically were) moderately or significantly associated with northern hardwood swamp communities.

Species Significantly Associated with Northern Hardwood Swamp
Birds
Veery
Canada Warbler
Mammals
Water Shrew
Moose
Species Moderately Associated with Northern Hardwood Swamp
Birds
American Woodcock
Least Flycatcher
Golden-winged Warbler
Herptiles
Four-toed Salamander
Wood Turtle
Mammals
Northern Long-eared Bat
Silver-haired Bat
Eastern Red Bat
Hoary Bat
Northern Flying Squirrel
Woodland Jumping Mouse
Gray Wolf

In order to provide a framework for decision-makers to set priorities for conservation actions, the species identified in Table 3-121 were subject to further analysis. The additional analysis identified the best opportunities, by Ecological Landscape, for protection, restoration, and/or management of both northern hardwood swamp and associated vertebrate Species of Greatest Conservation Need. The steps of this analysis were:

- Each species was examined relative to its probability of occurrence in each of the 16 Ecological Landscapes in Wisconsin. This information was then cross-referenced with the opportunity for protection, restoration, and/or management of northern hardwood swamp in each of the Ecological Landscapes (Tables 3-122 and 3-123).

- Using the analysis described above, a species was further selected if it had both a significant association with northern hardwood swamp and a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of northern hardwood swamp. These species are shown in Figure 3-26.

Table 3-122. Vertebrate Species of Greatest Conservation Need that are (or historically were) *significantly* associated with northern hardwood swamp communities and their association with Ecological Landscapes that support northern hardwood swamp.

Northern Hardwood Swamp	Birds (2)*		Mammals (2)	
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	Veery	Canada Warbler	Water Shrew	Moose
MAJOR				
North Central Forest				
Southeast Glacial Plains				
IMPORTANT				
Central Lake Michigan Coastal				
Central Sand Hills				
Central Sand Plains				
Forest Transition				
Northeast Sands				
Northern Highland				
Northern Lake Michigan Coastal				
Northwest Sands				
Superior Coastal Plain				
PRESENT (MINOR)				
Northwest Lowlands				
Western Coulee and Ridges				

Color Key

= **HIGH probability the species occurs in this Ecological Landscape**

= **MODERATE probability the species occurs in this Ecological Landscape**

= **LOW or NO probability the species occurs in this Ecological Landscape**

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Table 3-123. Vertebrate Species of Greatest Conservation Need that are (or historically were) *moderately* associated with northern hardwood swamp communities and their association with Ecological Landscapes that support northern hardwood swamp.

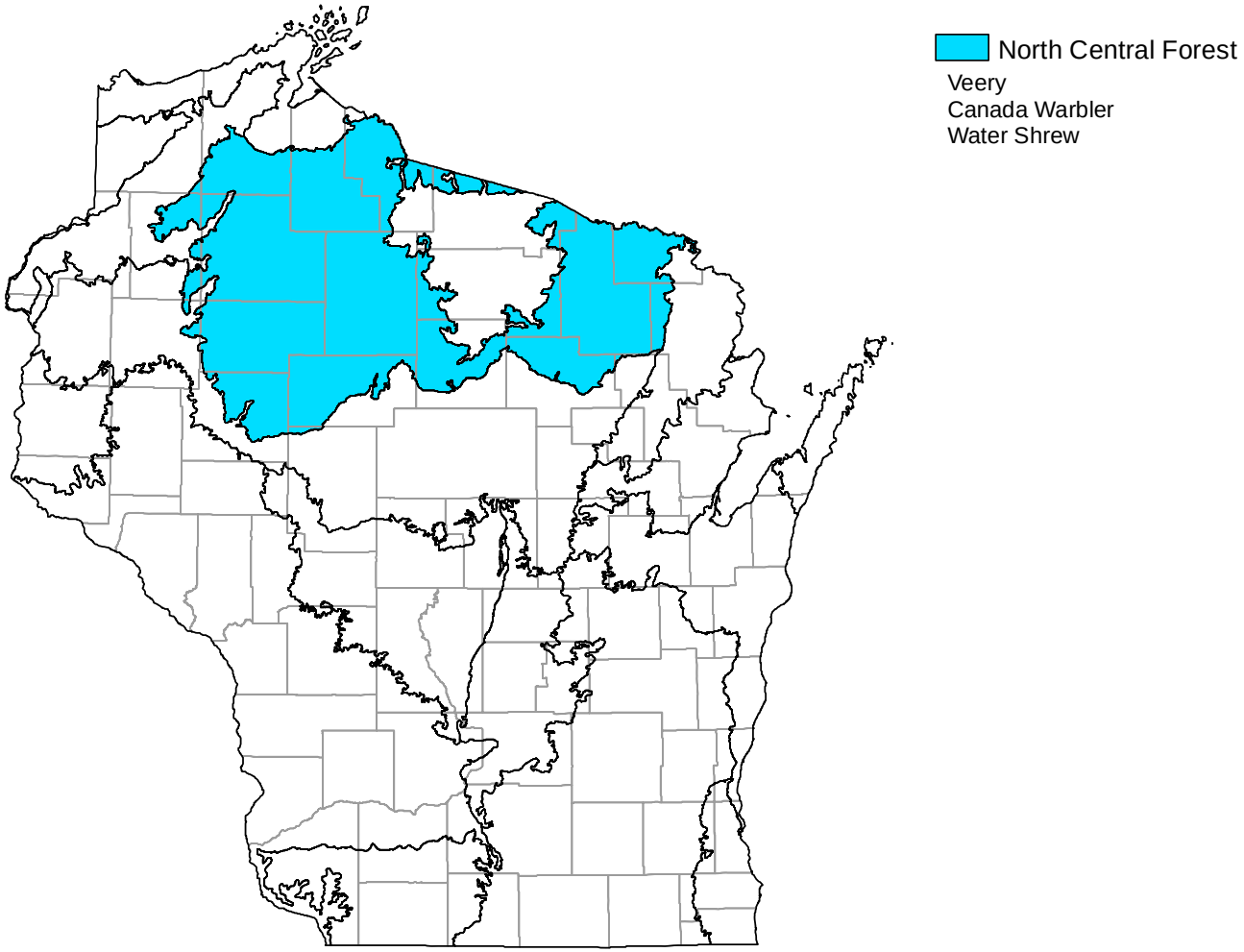
Northern Hardwood Swamp	Birds (3)*			Herptiles (2)		Mammals (7)						
Ecological Landscape grouped by opportunity for management, protection, and/or restoration of this community type	American Woodcock	Least Flycatcher	Golden-winged Warbler	Four-toed Salamander	Wood Turtle	Northern Long-eared Bat	Silver-haired Bat	Eastern Red Bat	Hoary Bat	Northern Flying Squirrel	Woodland Jumping Mouse	Gray Wolf
MAJOR												
North Central Forest												
Southeast Glacial Plains												
IMPORTANT												
Central Lake Michigan Coastal												
Central Sand Hills												
Central Sand Plains												
Forest Transition												
Northeast Sands												
Northern Highland												
Northern Lake Michigan Coastal												
Northwest Sands												
Superior Coastal Plain												
PRESENT (MINOR)												
Northwest Lowlands												
Western Coulee and Ridges												

Color Key

- = **HIGH probability the species occurs in this Ecological Landscape**
- = **MODERATE probability the species occurs in this Ecological Landscape**
- = **LOW or NO probability the species occurs in this Ecological Landscape**

*** The number shown in parentheses is the number of Species of Greatest Conservation Need from a particular taxa group that are included in the table. Taxa groups that are not shown did not have any Species of Greatest Conservation Need that met the criteria necessary for inclusion in this table.**

Figure 3-26. Vertebrate Species of Greatest Conservation Need that have ***both* a significant association with northern hardwood swamp ***and*** a high probability of occurring in an Ecological Landscape(s) that represents a major opportunity for protection, restoration and/or management of northern hardwood swamp.**



3.3.5.4.3 Threats and Priority Conservation Actions for Northern Hardwood Swamp

3.3.5.4.3.1 Statewide Overview of Threats and Priority Conservation Actions for Northern Hardwood Swamp

The following list of threats and priority conservation actions were identified for northern hardwood swamp in Wisconsin. The threats and priority conservation actions described below apply to all of the Ecological Landscapes in Section 3.3.5.4.3.2 unless otherwise indicated.

Threats and Issues

- Unsustainable forest practices and harvest during improper seasons can result in soil compaction and sedimentation into aquatic systems.
- Invasives (e.g., reed canary grass, giant reed, and purple loosestrife) are a problem in some places.
- Motorized recreation and high road densities contribute to soil loss and sedimentation, and facilitate the spread of invasive plants.
- Changes in hydrology from road construction and development are detrimental to this community.
- More information is needed to understand how to manage this type and prevent negative impacts.
- Conversion to tag alder or sedge meadow is quite common if adequate tree regeneration is not present or hydrology is altered.
- Grazing in this forest type can create problems by eliminating some plant species and reducing forest regeneration.
- Emerald ash borer may become a problem in Wisconsin, and may impact the ash component of this community type.

Priority Conservation Actions

- Monitor and control invasives. Continue and support biological control research to manage invasives that are present, and prevent spread of additional invasives.
- Use Best Management Practices and other sustainable forest community management practices to prevent detrimental soil and water impacts.
- Use adaptive management techniques to restore structure and composition; monitor and share results.
- Manage recreational uses so they do not harm the environment.
- Protect significant areas from hydrological changes from road construction and development. Restore hydrology where needed and/or appropriate.
- Preserve large blocks of habitat and embed in a matrix of other forest types.

3.3.5.4.3.2 Additional Considerations for Northern Hardwood Swamp by Ecological Landscape

Special considerations have been identified for those Ecological Landscapes where major or important opportunities for protection, restoration, and/or management of northern hardwood swamp exist. Those considerations are described below and are in addition to the statewide threats and priority conservation actions for northern hardwood swamp found in Section 3.3.5.4.3.1.

Additional Considerations for Northern Hardwood Swamp in Ecological Landscapes with ***Major*** Opportunities for Protection, Restoration, and/or Management of Northern Hardwood Swamp

Forest Transition

Fragmentation is a major issue in this Ecological Landscape since northern hardwood swamps are typically found within a mix of forest and farmland. Residential development is further fragmenting and

indirectly impacting this community type through increased runoff and altered hydrology. The central portion of this Ecological Landscape (Marathon, Waupaca, and Clark counties) offers the best opportunity to maintain and enhance this community type. These areas are very susceptible to invasive, non-native species, so detection and control are critical.

North Central Forest

Altered hydrology is an issue in some parts of this Ecological Landscape, especially from road construction and development. This Ecological Landscape is the best place to maintain large forest blocks for this type, and to implement other conservation actions because of the abundance of the type and the large blocks of public ownership. Connectivity with other large forested areas should be maintained or enhanced, including the Chequamegon-Nicolet National Forests, and forested areas of Price, Iron, Oconto and Taylor counties. Although forest management of this community is not practiced widely in this Ecological Landscape, careful use of alternative management techniques and best management practices in these areas is encouraged on public and private lands where they can be monitored long-term. Bur Oak Swamp, a site south of Crandon (Forest County), features a dominant bur oak/white oak hybrid. This unique variant may qualify as a separate community and warrants further research.

Additional Considerations for Northern Hardwood Swamp in Ecological Landscapes with ***Important*** Opportunities for Protection, Restoration, and/or Management of Northern Hardwood Swamp

Central Lake Michigan Coastal

Fragmentation is a major issue in this Ecological Landscape since wetland forest is only 9% of the landscape and forested areas are embedded within a matrix of agricultural uses. Residential development is further fragmenting and simplifying this community type. Invasives such as Asian honeysuckles and buckthorns are a problem. Grazing can inhibit regeneration, destroy understory plants, and contribute to the spread of invasives.

The best opportunities to protect the few remaining unprotected high quality sites are in the Door Peninsula Hardwood Swamp complex (northern Kewaunee County) and the Coppertown and Morrison swamps (Brown County). Grazing should be discouraged in this type.

Central Sand Plains

The type is extremely limited in this Ecological Landscape, and remaining patch sizes are small. Fragmentation is a major issue for these sites. Invasives such as Asian honeysuckles, garlic mustard and buckthorns are a problem. Dandy Creek Swamp in Meadow Valley Wildlife Area (Monroe County) is one example of protected northern hardwood swamp in this Ecological Landscape.

Northern Lake Michigan Coastal

Fragmentation is a serious issue in this Ecological Landscape. Invasives are a problem (e.g., garlic mustard). Grazing still occurs in this community in some areas of Door County. Very high recreational use in Door County is a factor in many kinds of impacts, including trail development that facilitates the spread of invasives, and fragmentation due to housing and roads. The best opportunity for protection is in the Door Peninsula hardwood swamp complex (southern Door County). There is some potential for impacts from invasive plant species such as reed canary grass, buckthorn and Asian honeysuckles, so detection and control are important.

Northwest Lowlands

There are some potential impacts here from invasive plant species such as buckthorn and Asian honeysuckle, thus detection and control are important. This Ecological Landscape has a relatively low human population density and lower road density, so there are fewer impacts from development and altered hydrology. Although not as many acres of this community type exist here as in some other Ecological Landscapes, the area presents a good opportunity for protection. Much of this community type is in public county forest and has not been managed (harvested) for many years. It is not likely to be harvested for many more years. The Norway Point Bottomlands State Natural Area in Governor Knowles State Forest (Burnett County) is a good, protected example of this community.

Southeast Glacial Plains

This type is limited in this Ecological Landscape, but includes patches along the Rock River. Where not protected through the implementation of conservation elements of local and regional land use plans, this type can be impacted by residential and commercial development. Huiras Lake (Ozaukee County) and Shaky Lake (Outagamie County), are good examples of this type and both are State Natural Areas.